COOLING ENVIRONMENTS



nVent RDHX cooling for AMD Helios™

OCP SILVER Member

AI CLUSTERS



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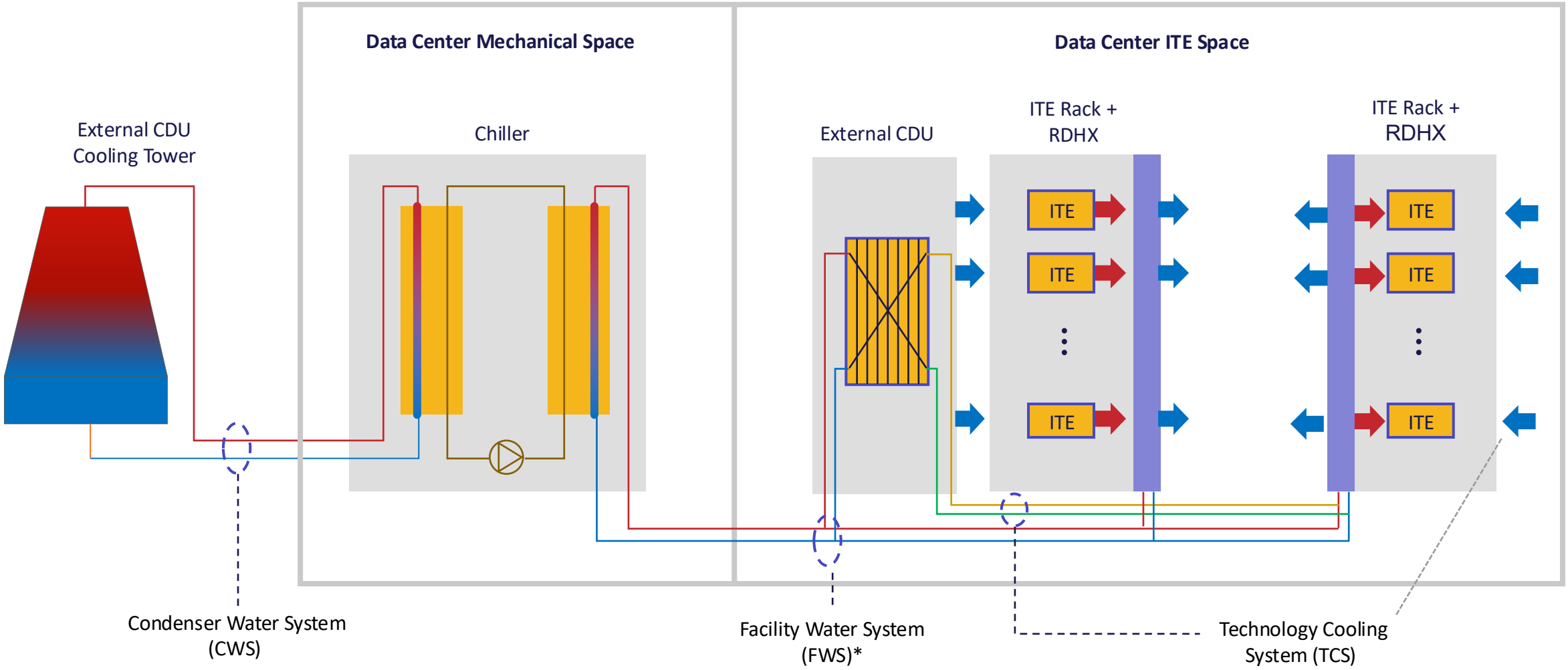
MARKET IMPACT & ADOPTION



Industry Progression and why RDHX

- Air cooled rack densities are increasing beyond 20-40kW exceeding traditional air-cooling room limits of ~10-15kW per rack and 20-40kW per rack when using HAC solutions
- New AI offerings are now exceeding 250kW per rack driving direct to chip HDLC solutions.
  - Direct to chip solutions are capturing ~60-90% of the heat direct to water, leaving significant amount of heat being dissipated to air
  - In the case of Helios, with a rack power of ~250kW per rack and an expected 89% heat capture to liquid, we expect to see ~27.5kW heat rejected to air
- Cooling as close to the heat source as possible drives a more efficient solution – i.e. drive a room neutral solution by capturing the heat at the rack versus recirculating at room level

Air to Liquid - RDHX – Data Center Topology



** To doors only if dew point control can be managed*

Standard nVent RDHX Quick Facts

- Smallest depth profile RDHX on the market – **only 252mm**
- Stand alone option available with two post frame decoupled from rack
- 42, 47, 48U, 52U heights and 600, 750, 800mm widths available
- Greater than 90-degree door opening for easy access to servers for maintenance
- Up to 5,885 CFM (10,000 m3/hr for 750 & 800 mm wide door)
- Maximum capacity 68kW at 14deg C water
- New valve & sensor kits cut labour time onsite
  - Pre-assembled and pressure tested to guarantee installation quality
  - Tri-clamp fittings for ease of installation and uniformity across regions



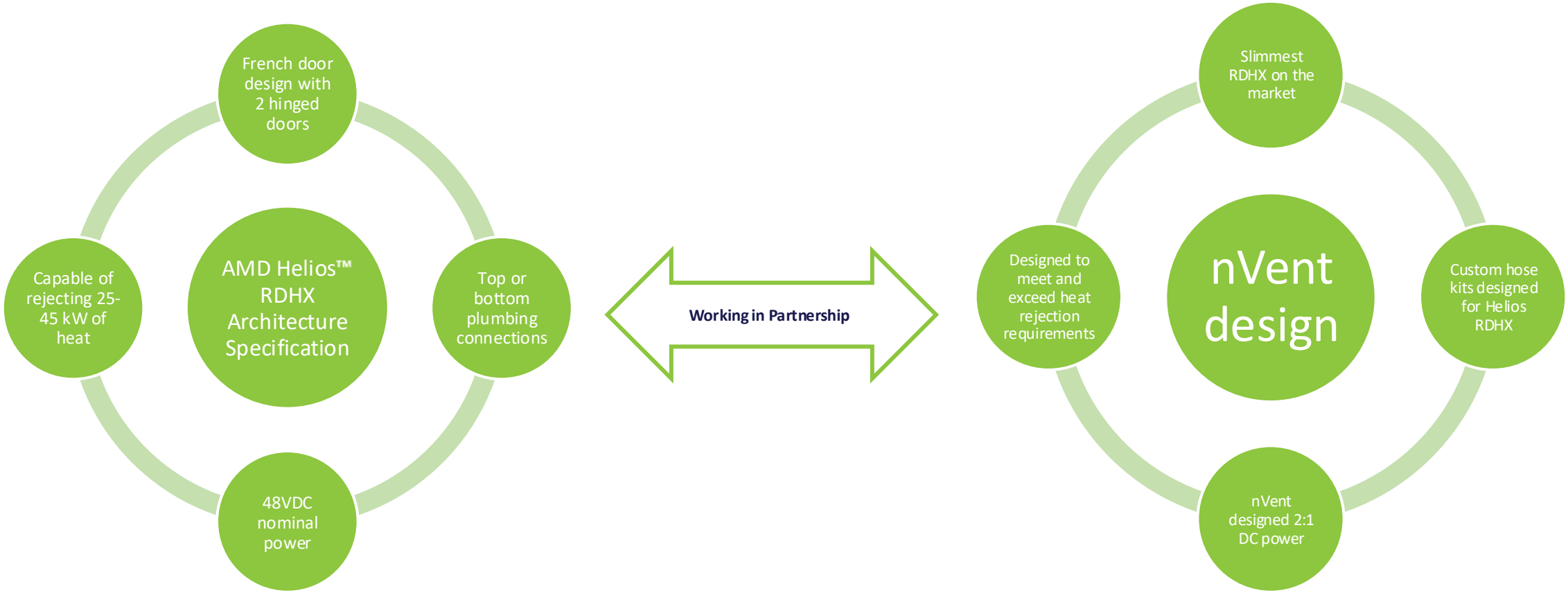
TCO – Serviceability

RDHX PRO Simplifies

- Critical components hot-swappable
- No shut-down for service & repair
- No need to open door for swap of critical components
- Minimizes need for skilled or external personnel
- Power, fan, network redundancy
- Cooling even if controller fails
- Control mode fallback @ sensor failure
- Reduces down-time



Product Brief Highlights

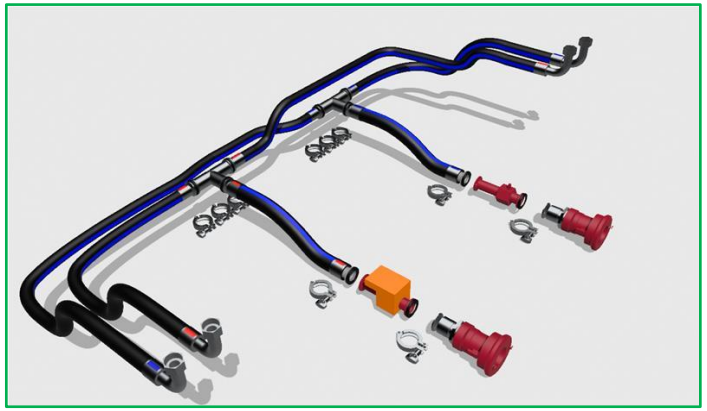


Helios™ rack power = 246kW with 89/11% liquid air split

Specifics for the Helios™ Dual RDHX



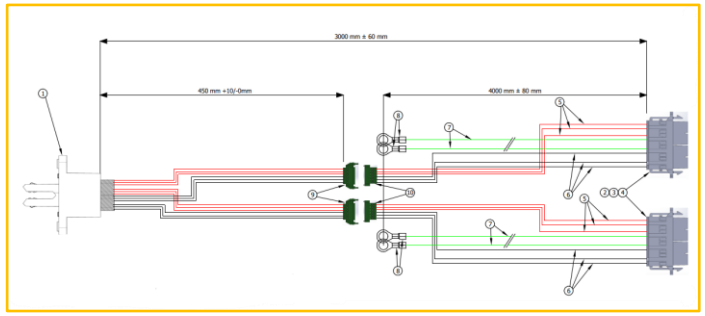
Hoses from the coil on each door, tee together and go to 1 control valve / sensor kit



Controllers are ganged to ensure no confliction between internal sensors

Fans are controlled by differential pressure sensors to ensure IT fans are never overworked

Regular power supplies for 195 – 250 VAC are changed for dedicated DC power.
The individual door supplies connect together for a single busbar clip



Why the nVent Solution

Size

- nVent utilise axial fans to reduce depth of the overall product as well as a slimmer water coil
- With Helios™ being a double wide solution, the more depth that can be saved ensures maximum space is available in data halls

Mechanical Connections

- Using a 2:1 hose solution, nVent ensure only 1 connection to the facility manifold is required
- Utilising 2” Danfoss FD83 connections ensures fast connection and ease of ongoing maintenance

Redundancy by design

- Providing N+1 fans on each door
- Control algorithms that ensure constant operation

Hose kit design

- Ability to use the same hose kit for top or bottom feed deployments

Connectivity

- Modbus RTU/TCP, Redfish, SNMP, BACnet all available as standard
- RDHX can be monitored at the unit via the HMI, via a connected laptop and remotely via web GUI



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Call to Action

- Busbar Connections for DC powered RDHx
- Standardization for Hose kit designs Single and Dual – connection type to FWS
- Extension frame design for RDHx on OCP Racks

Thank You!

